Attitudes of students towards physics learning in some selected senior secondary schools in Birnin Kebbi, Kebbi State, Nigeria

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Abstract

This study examined the attitudes of students towards physics learning in some selected Senior Secondary Schools in Birnin Kebbi, Kebbi State, Nigeria. The sample for study was one hundred and twenty-five (125) Senior Secondary School two (SSS2) Physics Students from the five (5) selected senior secondary school in Birnin Kebbi, Kebbi State, Nigeria. The design method was adopted because of the purpose of describing and analyzing the existing condition of attitudes of students towards learning physics. From the findings of this study, it was established that students have high favorable attitudes towards physics-oriented career subjects. However, the poor performance of students in physics was due to lack of information, lack of self-confidence, inability to solve physics questions correctly using the appropriate formula and not been able to see the relevance of physics to the society. Consequently, the good ones among the students show that they have interest in physics lesson and thereby developing positive attitude toward solving physics problems. The study recommends that, prospective studies should be conducted based on a much wider sample and within the context to provide better understanding of this subject. Also, the teachers and students have to adjust to new roles which may lead to changes of classroom processes which in turn affect the nature of the relationship between the teacher- student interpersonal relationship and student's attitudes.

Keywords: attitude, physics, performance, students, teacher

Introduction

Physics is a core science subject that is closely related to technology. It is a branch of physical science that explains the property of matter and energy, and the relationship between them. The subject focuses on the general nature of the natural world and has played a crucial role in the service of mankind. Its principles are daily applied in our homes in our day to day activities and the discoveries made from these principles have been of great importance to human existence. The knowledge of Physics is very important in the technological world because its principles and laws are applied at various degrees in our life considering the very large number of electrical and electronic devices which utilize them one or the other. Physics is a science that deals with behavior and natural phenomena that are related to current phenomena or phenomena that occur today (Giancoli, 2014) [8]. In physics learning it is expected to reflect three aspects in the learning process, namely aspects of attitudes, knowledge and skills.

This is stated in Regulation of Minister of Education and Culture Number 20 of 2016, "It is explained that each subject including Physics is a means to develop and train students to have competencies in the dimensions of attitudes, knowledge, and skills". Attitudes are interpreted as evaluative responses, which are based on students to make conclusions on stimuli (Azwar, 2002) [1].

Attitude is an internal state that influences the actions of an individual. Gbore (2013) [7] defined attitude as the totality of an individual's inclination towards object, institution or idea.

According to Reid (2004) [14], attitude expresses our evaluation of something or someone which may be based on our knowledge, our feelings or our behaviour, and may influence future behavior.

Reid (2004) [14] stated that attitudes are important to us because they cannot be neatly separated from study. Attitude could be learnt or formed and acquired from member of the family, teacher and peer group. Adesina and Akinbobola (2005) opined that attitudes could be acquired through learning and can be changed through persuasion using variety of techniques. Omotayo (2002) [10] stated that students bring into classroom acquired attitude which could hinder or facilitate learning.

Attitude refers to predisposition to classify objects and events, to react to them with evaluative consistency. A person who shows a certain attitude towards something is reacting to his conception of that thing rather than to its actual state. Attitude are formed by people as a result of some kinds of learning experience if the experience is favorable a positive attitude is found and vice versa (Orunaboka, 2011) [12]. The attitude people hold can frequently influence the way they act in person and larger situation. For this reason, administrators, psychologists and sociologists are concerned with attitude development, how they affect behavior and how they can be changed. Attitude does not only include the negative attitude such as prejudices, biases and dislikes, but also positive attitudes are sometimes called sentiment, which include our attachment and loyalties to person, objects and ideas (George, 2000) [6]. Attitude thus seems like a system of ideas with an emotional core or content. Human beings are not born with attitudes, they learn afterwards. Some attitudes are based on the

peoples own experience, knowledge and skills and some are gained from other sources. However, the attitude does not stay the same. It changes in the couple of time and gradually (Olasheinde and Olatoye, 2014) [13]. Fasakin (2011) [5] recognized attitude as a major factor in a subject choice. He also considered attitude as a mental and natural state of readiness, organized through experiences exerting a directive influence upon the individual's responses to all objects and situation with which it is related. Positive student attitudes toward physics will have a sense of fun when the learning process takes place. The pleasure of students in learning will have a more intensive character in learning (Manasi, 2015) [9]. Students who have a great pleasure in learning physics will affect physics results. Good physics results are influenced by the enjoyment of students' science and pleasure giving a predictive effect of value in science learning (Ainley, 2011) [2]. Students who are happy in learning physics will have a high curiosity towards physics. Students also have a negative attitude towards learning physics, namely students do not like to learn it and their learning outcomes are low. When students have a bad attitude towards learning physics will affect the level of thought to look for information in solving a physics problem (Olusola & Rotimi, 2012) [11].

Erdemir, N. & Bakirci (2009) [4] described attitude as tendency for individuals who organize thought, emotions, and behaviors towards psychological object.

Human beings are not born with attitudes they learn afterwards. Some attitudes are based on the peoples own experience, knowledge and skills and some are gained from other sources. However, the attitude does not stay the same. It changes in the couple of time and gradually.

Finally, the behavioral component pertains two the way in which people act toward the object and its assessment is performed with directly observed behavior (Salta, K., & Tzougraki, C., 2004) [15]. The differences in attitude students towards Physics have been an issue in many countries. In response to this, many researchers have been carried with mixed reports. Therefore, this research focused on identification of student's attitudes towards physics learning.

A review of the literature reveals that many science educators have recognized that students view about science course is different from scientific ones. Craker (2006) [3] suggested that prior knowledge has a great effect on students' knowledge of scientific concepts. Festingel's cognitive theory states that individuals seek some degree of consonance between their feeling (attitudes) and action.

George (2000) [6] agreed with the assertion that attitude is comprised of two component parts which are affective in dealing with mental process. The kind of attitude builds up by students influence their learning abilities in a particular subject.

Purpose of the study

The purpose of the study is: to identified the attitudes of students towards Physics in Secondary Schools in Kebbi State, to examine the causes of their poor performance in physics and the effect of teachers – students' interpersonal relationship towards physics.

Research questions

This study addressed the following questions:

1. What are the attitudes of students generally towards physics?
2. Does teacher – student interrelationship have effect on students learning outcome in physics?
3. Do students perform better in other subjects combined with physics than physics?

Study design - sample and sampling technique

The study is a descriptive study of survey type. The sample for this study comprises of 100 physics student of science secondary schools in Kebbi State. The students comprise of 70 males and 30 females. This design method was adopted because of the purpose of describing and analyzing the existing condition of attitude of students towards physics.

Method

The attitude measuring scale was twenty items with four likes – type option. A four-point scale used was ranged from SD=strongly disagree, D=disagree, SA-strongly agree and A=agree. The total score for each attitude category indicates level of favorably attitude in that category. The research questionnaires were based on two different facts which are students' attitude to learning of physics and teachers – students' interrelationship towards learning of physics.

Research question 1

Do students attitude generally affect their performance towards physics? The answer to the research question 1 is illustrated in percentage in Table 1 as well as Figure 1 shows the illustration in chart form.

Table 1: Students altitude towards learning of physics

S/N	Items	S. D	%	D	%	S. A	%	A	%
1	I find physics as a simple subject.	60	60	10	10	5	5	25	25
2	I only hate the calculation aspect in physics.	35	35	10	10	15	15	40	40
3	I feel bore when physics teacher is going on.	60	60	20	20	3	3	17	17
4	I usually get scared when physics teacher is going on.	25	25	45	45	20	20	10	10
5	I hate my physics teacher's attitude.	30	30	60	60	7	7	3	3
6	Physics class is a fun.	15	15	25	25	45	45	15	15
7	I understand other subject combination than physics	20	20	30	30	25	25	25	25
8	I have better understanding of practical physics	5	5	10	10	40	40	45	45
9	I don't see physics relevance to everyday life and society	15	15	20	20	10	10	55	55
10	We have enough physics teacher	42	42	43	43	10	10	5	5

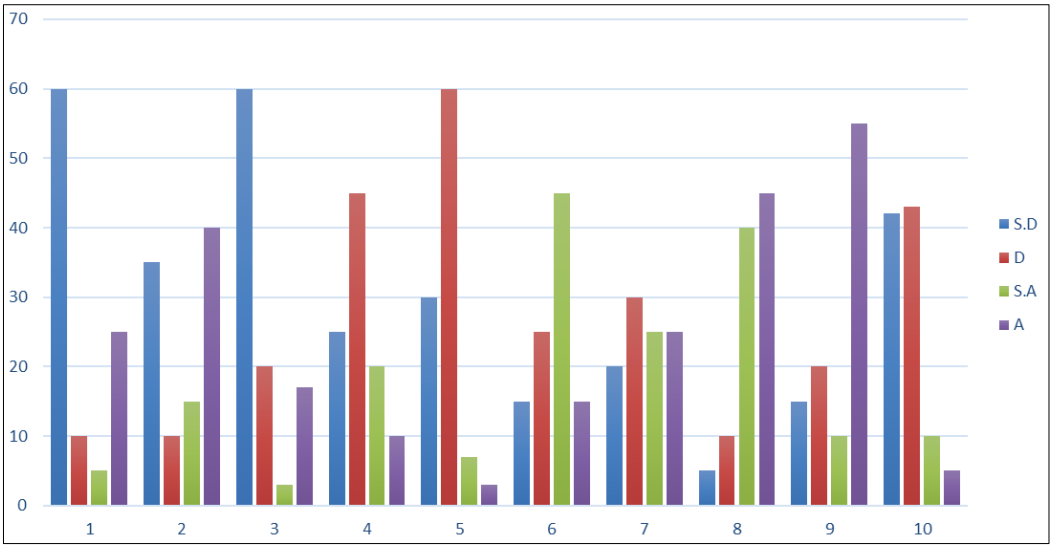

Fig 1: Histogram illustrating students' altitude towards learning of physics

Research Question 2

Does the teacher - student interrelationship have effect on students' performance?

The answer to the research question2 is illustrated in percentage in Table 2 while Figure 2 shows the illustration in chart form.

Table 2: Teacher's attitudes and students learning outcomes

S/N	ITEMS	S.D	%	D	%	S.A	%	A	%
1	My physics teacher lack innovation, encouragement and resourcefulness	25	25	45	45	4	4	26	26
2	I entertain fear when my physics teacher entered the class	10	10	70	70	5	5	10	10
3	My teacher always come to class regularly	2	2	3	3	55	55	40	40
4	Our teacher give us extra time for the homework that we cannot complete on time	20	20	40	40	15	15	25	25
5	Students break some rules in the teacher class	65	65	25	25	3	3	7	7
6	It is difficult to ask our teacher questions based on the topics taught	15	15	65	65	1	1	9	9
7	The teacher keep changing their decisions	40	40	50	50	4	4	6	6
8	Physics questions are too difficult to answer	10	10	10	10	30	30	50	50
9	teachers in other science subjects are better than the one in physics	55	55	40	40	2	2	3	3
10	Our teacher use interactive method when teaching in the class	5	5	5	5	25	25	65	65

Table 2: Teacher's attitudes and students learning outcomes

S/N	ITEMS	S.D	%	D	%	S.A	%	A	%
1	My physics teacher lack innovation, encouragement and resourcefulness	25	25	45	45	4	4	26	26
2	I entertain fear when my physics teacher entered the class	10	10	70	70	5	5	10	10
3	My teacher always come to class regularly	2	2	3	3	55	55	40	40
4	Our teacher give us extra time for the homework that we cannot complete on time	20	20	40	40	15	15	25	25
5	Students break some rules in the teacher class	65	65	25	25	3	3	7	7
6	It is difficult to ask our teacher questions based on the topics taught	15	15	65	65	1	1	9	9
7	The teacher keep changing their decisions	40	40	50	50	4	4	6	6
8	Physics questions are too difficult to answer	10	10	10	10	30	30	50	50
9	teachers in other science subjects are better than the one in physics	55	55	40	40	2	2	3	3
10	Our teacher use interactive method when teaching in the class	5	5	5	5	25	25	65	65

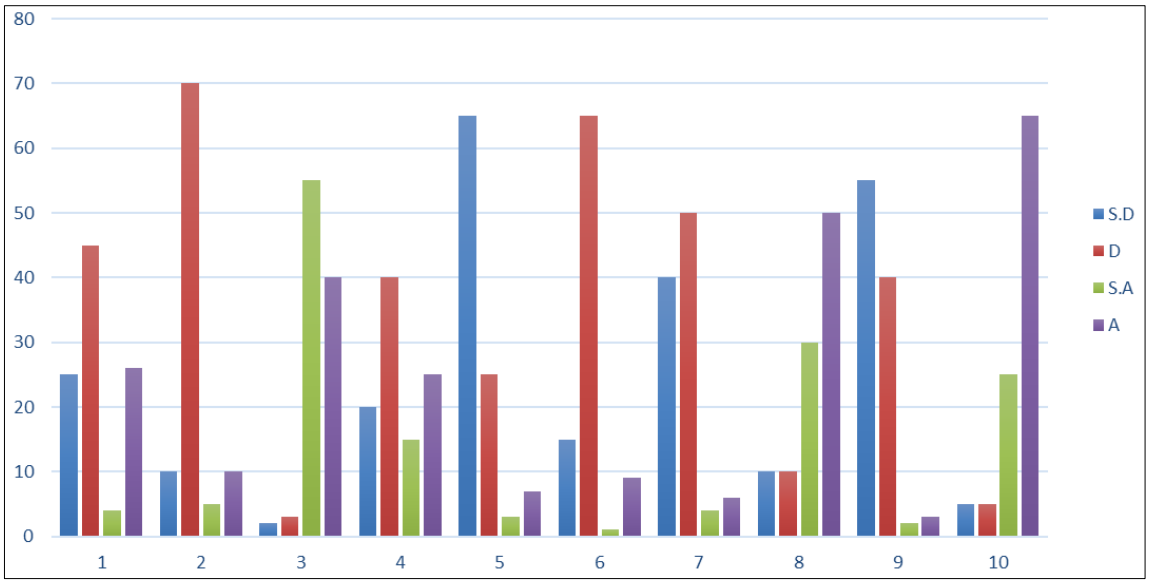

Fig 2: Histogram illustrating teachers' attitudes and students learning outcomes

Discussion of results

Table 1 revealed that physics class is always an interacting class though difficult to understand especially when dealing with the theoretical part most especially the calculation aspect. However, it was revealed from the table that 25% of the students entertain fear while physics lesson is going on and 75% attested that physics, though being a difficult subject, is still being enjoyed by students during the practical aspect. The most pathetic side of it is that 55% of the students don't see the relevance of physics to everyday life and society while 45 students don't could realize the fact. Also, there is need for more physics teachers in the school because 85% of the respondents confirmed that while only 15% of them did not see any need for that.

From the table 2, it was observed that 70% of the respondents disagree with fact that their physics teachers lack of innovation, encouragement and resourcefulness while 30% of the respondents agreed.

It is also observed from the table that 80% of the respondents confirmed the fact that they don't entertain fears when their teachers entered the class while 20% confirmed otherwise.

Moreover, 5% of the respondents disagreed with the regularity of the teachers in the class while 95% of the respondents agree with fact. It was also observed from the the teachers don't give room for extra time to complete the assignment given to students. Also, the level of discipline was very high with fact that 90% of the respondents disagree with breaking rules in the class while 10% agree to it.

However, 10% of the students find it difficult to ask questions from their teachers while 90% prove that wrong and this shows that the teaches are more friendly to their students despite from the fact that their questions are too difficult to solve. It can also deduce from the table that the teachers always free to ask and answer questions in the class, this shows that the physics teachers are friendly with their students.

Conclusion

From the findings of this study, it was established that students have high favorable attitudes towards physics oriented career subjects. However, the poor performance of students in physics was due to lack of information, lack of self-confidence, inability to solve physics questions correctly using the appropriate formula and not been able to see the relevance of physics to the society. Consequently, the good ones among the students show that they have interest in physics lesson and thereby developing positive attitude toward solving physics problems.

Recommendations

It has been discovered that there are some reasons or factors behind the negative attitudes of students toward physics. It therefore becomes necessary that a positive step should be taken towards modifying the factors in other to ensure and maintain positive attitude and boost students' interest for physics.

Firstly, prospective studies should be conducted based on a much wider sample and within the context to provide better understanding of this subject. Also, the teachers and students have to adjust to new roles which may lead to changes of classroom processes which in turn affect the nature of the relationship between the teacher- student interpersonal relationship and students attitudes

References

1. Azwar S. Sikap manusia: teori dan pengukurnnya. Yogyakarka: Pustaka Pelajar, 2002.
2. Ainley MA. A Cultural Perspective on the Structure of Students Interest in Science. International journal of science education, 2011, 51-71.
3. Cracker DE. Attitudes towards science of students enrolled in introductory level Science courses at UWLa

Crosse. UW-L Journal of Undergraduate Research, 2006; 9:1-6.
4. Erdemir N, Barkirci. The change and development of attitude of science teacher candidates towards branches of Science. Kastamonu Education Journal, 2009; 171:161-170.
5. Fasakin PJ. Effect of everyday Phenomena on Students Achievement, Attitude and Practical Skills in Physics. A Master Dissertation submitted to the Department of Teacher Education, University of Ibadan, Ibadan, Nigeria, 2011.
6. George R. Measuring Change in Students Attitudes towards Science over time: An application Latent variable growth Modelling. Journal of Science and Technology Education, 2000; 9(3):213-215.
7. Gbore LO. Relative Contributions of Teachers Variables and Attitude towards Academic Achievement in Biology among Senior Secondary School Students in Ondo State, Nigeria. Medeterrian Journal of Social Sciences, 2013; 4(1):243-250.
8. Giancoli DC. Fisiki: Prinsip dan aplikasi edisi ke-7 jilid 1. Jakarta: Erlangga, 2014.
9. Masasi L. Enjoyment of Learning in Upper Secondary Education. An exploratory research. Procedia- Social and Behavioral Sciences, 2015, 639-646.
10. Omotayo KA. Correlate of Attitudes towards Science and Academic Achievement of Secondary School Students in Science Subjects. Journal of Teacher Education, 2002; 10(1):20-27.
11. Ousola OO, Rotimi CO. Attitudes of Students towards the Study of Physics in College Education Ikere, Ekiti State, Nigeria. American International Journal of Contemporary Research, 2012; 2(12):86-89. http://www.aijcrnet.com/journals/Vol.2No12December-2012/9.Pdf
12. Otunaboka TT. Attitude of Nigerian Secondary School Students towards Physical Education as a Predicator of Achievement in the Subject. Journal of Education and Practice, 2011; 2(6):1-8.
13. Olasheinde KJ, Olatoye RA. Scientific Attituide, Attitude to Science and Science Achievement of Senior Secondary School Students in Katsina State, Nigeria. Journal of Educational and Social Research, 2014; 4(1):445-452.
14. Reid N. Getting started in Pedagogical Research, *LTSN* Physical Science Guide. University of Hull: LTSN Physical Science Centre, 2004.
15. Salta K, Tzougraki C. Attitude towards Chemistry among 11th grade Students in high School in Greece, Science Education, 2004; 88:535-547.